

# *Data Analytics in Support of Advanced Planning & System Operations*



***SDG&E EPIC-2 (2015-17)***

# *San Diego Gas & Electric Co.*



- **Regulated public utility**
  - Founded April 18, 1881
- **Owned by Sempra Energy**
- **Service delivery to 3.4 million consumers**
  - Serving the 8<sup>th</sup> largest city in the U.S.
  - 1.4 million electric meters (1.33M operational AMI meters)
  - 840,000 natural gas meters
- **Coverage area spans 4,100 square miles (10,600 square kilometers)**

# Strategic Focus

- Our mission
  - “ We provide safe, reliable energy infrastructure and services that allow our communities to grow and prosper.”
- Our priorities
  - Reduce Rates: increased electric system throughput and higher reliability mean lower average rates and better service to customers
  - Achieve Efficiencies: improvement of data analytics will lead to achievement of better operational efficiencies
  - Manage Growth: management of the rapidly growing data stream and associated decision making will be essential to managing growth



# Objective

- Address the anticipated “data tsunami” and improve data management
  - Demonstrate solutions to problems stemming from the extensive amount of real-time and stored data being archived from field devices
  - Identify the data mining procedures and the data-archiving methods,
  - Utilize this data to improve power system operations
- Document solutions deemed to be best practices and make available to stakeholders

# Our Challenges

- Bring together data from various sources:
  - AMI (smart meters),
  - rooftop PV and other customer generation,
  - voltage data, load, outage data,
  - equipment failure, O&M,
  - attributes of our system in GIS, weather, etc.
- Corrective maintenance – streamlining and automating to eliminate or enhance manual processes
- Analyze the individual business needs or requirements around data capture.

# Key Drivers

- Meet the goals of SB17 to modernize utility power system infrastructure
- Protect against cybersecurity and critical infrastructure threats
- Safely, reliably and affordably integrate technologies that help achieve the State's energy goals
- Demonstrate California 's leadership in new technology
- Develop and maintain a skilled workforce versed in newest technologies

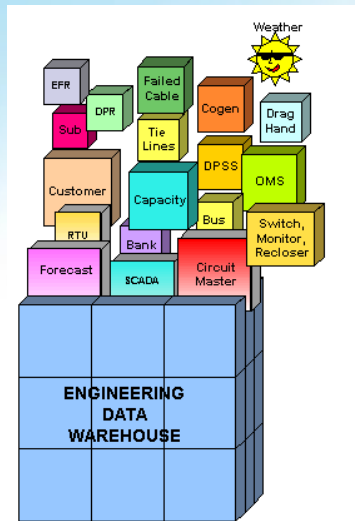
## Example Use Cases

- Autonomously query data to draw trends in equipment usage/failure and provide confidence levels associated with failure rates and projected inventory needs.
- Autonomously query data to draw trends in transformer loading capabilities, including propensities to be oversized or undersized in order to ensure proper asset utilization and fusing coordination.
- Mine existing data to improve operating practices such as Conservation Voltage Reduction (CVR) and Volt/VAr management.



# Project Concept

## Data sources:





## Phase 1 – Requirements Definition

Task #1 – Identify Data  
Sources & Data Types

Task #2 – Identify  
Prospective Uses of Data

Task #3 – Specify Data  
Analytics System Needs



## Phase 2 – System Implementation

Task #4 - Design Test System

Task #5 - Implement Test System

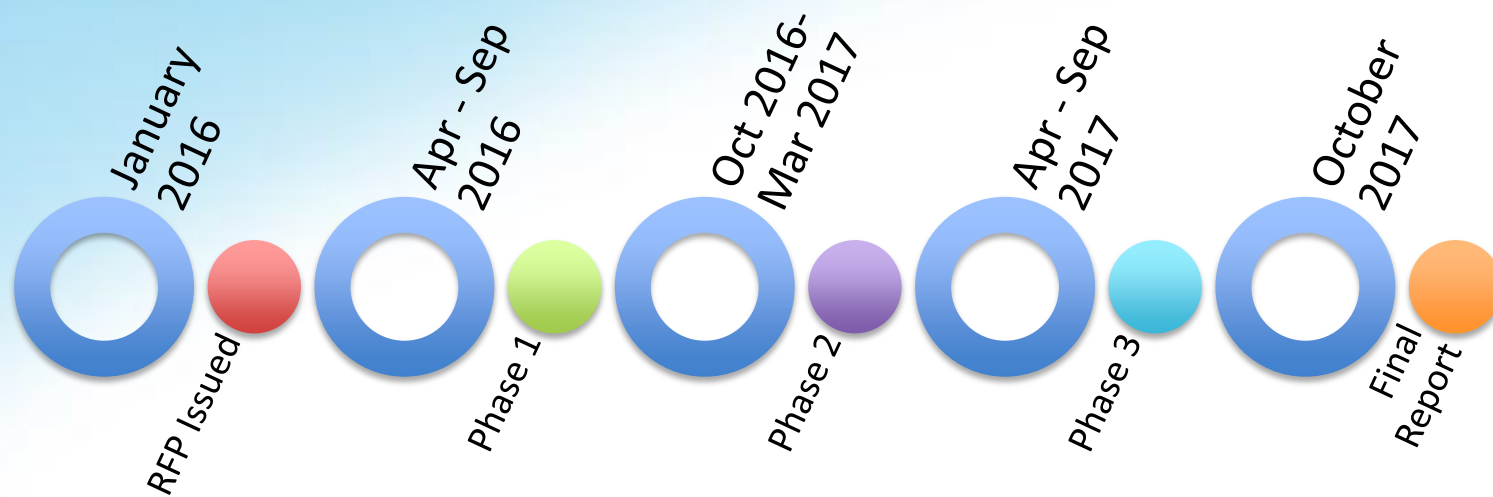


## Phase 3 – Demonstration, Analysis and Reporting

Task #6 – Conduct Demonstration  
(lab/field)

Task #7 – Analysis and Reporting

# Project Tentative Timeline



# Contact

❑ For questions or interest in the project, please contact:

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